

Case Study: Using 360 photographs to create a Virtual Tour of a National Historic Ship

By Hugh Davies

Introduction

As a response to the COVID 19 public health restrictions, which caused the suspension of the sailing season, The Excelsior Trust wanted to make the ship more accessible online. Creating a virtual tour was seen as a good short term solution with ongoing long term benefits for greater online engagement. The completed tour is viewable at <http://www.theexcelsiortrust.co.uk/discover/360-degree-photo>

Equipment

The tour was created with the following essential equipment. (We did experiment using a 360 degree photo app on a smartphone but found that the stitching together of up to 30 individual photos for each shot was both time consuming and in practice frequently flawed)

Ricoh Theta SC camera

Standard camera tripod

Low end smartphone (Android)

Low end HP Chromebook

The Ricoh Theta range of cameras is an established range of entry level dedicated 360 degree cameras. The model range has evolved over the last few years with increasing levels of specification. The SC2 is the current low end model, available online priced at between £230 and £290. We managed to purchase a recently discontinued SC model for £140

The Nokia mobile phone we used was bought within the last year for less than £100. Other android or ios smartphones could be used. The smartphone is used as a remote control device for the theta camera. It provides a remote viewfinder and a camera trigger among other features. The link between camera and mobile phone uses wifi which in practice we found to be limited in range to around 6m

The HP Chromebook we used was bought recently for £230. Other chromebook, Windows or apple laptops could be used.

We also used the following optional equipment

Theta camera mount extension

100mm dia Aluminium disc fitted with a bubble level

The camera mount extension is a simple 3 inch long rod that lifts the ricoh camera above the tripod. It helps to reduce the visual footprint of the tripod within the 360 degree photographs. It was bought online for £12

A sheet of 2mm aluminium sheet was fabricated into a 100mm dia disc with a central ¼ inch diameter hole. Onto this was superglued a small bubble level purchased online for approximately £4. This item was designed to fit over the ¼ inch stud on the tripod before fixing the camera mount rod and camera. The disc masks the tripod from view in the 360 degree photos and the bubble level assists with levelling the tripod head.

Software

The virtual tour required the use of the following software

Theta Camera app (Android)

This software is free to download

Seekbeak (Software as a service)

There are many virtual tour software solutions on the market. We were attracted by Seekbeaks well designed interface, simplicity and flexibility. It was also important for us that it was an online product which did not require a specific operating system. The software is provided as both a limited free trial and on a subscription basis. We opted for a \$14 per month subscription billed monthly. It provides both virtual tour creation tools, tour hosting and configurable options for creating embeds for use on websites etc <http://www.seekbeak.com>

Technique for creating the virtual tour

Prepare the ship and the immediate environment

Choose your proposed camera positions. We used a tape measure to set out 9 positions at 6ft intervals in a straight line fore to aft along the deck. We used 5p coins to unobtrusively temporarily mark the camera positions.

Choose your positions to take the photographs from. Remember the photographs are 360 degrees so there is no "behind the camera". We used the companionways etc to conceal the photographer. We found that we needed to choose locations fairly close to the camera to avoid the connection between the camera and the mobile phone being dropped. Where the connection was dropped we generally found that we needed to restart the camera and phone to re establish a connection (a simple but fairly tedious process so best avoided)

Take the full sequence of shots trying as much as possible to have similar lighting conditions in each shot. Take care to level the tripod for each shot. (The horizon can be levelled in the seekbeak software but it can be simply avoided)

Download the 360 photos from the camera to the laptop directly using the supplied USB cable.

Upload the photos to your Seekbeak account to create each scene in your virtual tour.

In Seekbeak add hotspots to each scene to link the photos together. The hotspot icons are highly configurable so you should be able to achieve the appearance that you are after. We went for simple arrows, using transparency settings to remove text that we didn't want to show. You can also select the starting view of each scene that you are linking too to ensure that the direction of view remains consistent. If you are interested in creating rich content in your virtual tour then it is worth noting that seekbeak can facilitate the inclusion of a wide range of supplementary digital information into your virtual tour from text and photos through to audio and video).

Lastly choose the starting scene for your tour and use the share functions to create an embed link for your website.

Copy the embed code and paste it into the appropriate place in the content management system in your website.

Conclusions

After conducting our research and experiments with the technique over several weeks the final assembly of a tour was done very simply and quickly. The 9 scene tour of Excelsior was photographed within a couple of hours and the editing work in seekbeak took another couple of hours. Embedding into the website was achieved with just a few minutes work.

In practice the only essential items we required to purchase were the camera and the seekbeak software subscription. All the other items were already available to us. The 360 photographs used in the tour can of course be retained for upload to alternative virtual tour creation sites or software or retained as a digital archive.

We found that the published tour has already been well received when announced on social media and the seekbeak control panel allows us to see visitor statistics, enabling us to evaluate the level of engagement achieved. The next stage with this project would be to provide rich content explanatory hotspots to enable us to greater inform and engage interested virtual visitors.

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